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EXAMINER

MCGUTHRY BANKS, TIMA M

ART UNIT PAPER NUMBER

1742

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6

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.	09/965,946	Applicant(s)	TC 6 MIZIA ET AL.
Examiner	Tima M. McGuthry-Banks	Art Unit	1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

1) Responsive to communication(s) filed on \_\_\_\_.  
2a) This action is FINAL.                    2b) This action is non-final.  
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

4) Claim(s) 1-26 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
5) Claim(s) \_\_\_\_ is/are allowed.  
6) Claim(s) 1-21 is/are rejected.  
7) Claim(s) 22,25 and 26 is/are objected to.  
8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

9) The specification is objected to by the Examiner.  
10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
11) The proposed drawing correction filed on \_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.  
12) The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.  
14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.  
15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

1) Notice of References Cited (PTO-892)                    4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_.  
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)                    5) Notice of Informal Patent Application (PTO-152)  
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_                    6) Other: \_\_\_\_

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**DETAILED ACTION**

1. The papers filed on 18 January 2002 (certificate of mailing dated 20 December 2001) have not been made part of the permanent records of the United States Patent and Trademark Office (Office) for this application (37 CFR 1.52(a)) because of damage from the United States Postal Service irradiation process. The above-identified papers, however, were not so damaged as to preclude the USPTO from making a legible copy of such papers. Therefore, the Office has made a copy of these papers, substituted them for the originals in the file, and stamped that copy:

**COPY OF PAPERS  
ORIGINALLY FILED**

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If applicant wants to review the accuracy of the Office's copy of such papers, applicant may either inspect the application (37 CFR 1.14(d)) or may request a copy of the Office's records of such papers (*i.e.*, a copy of the copy made by the Office) from the Office of Public Records for the fee specified in 37 CFR 1.19(b)(4). Please do **not** call the Technology Center's Customer Service Center to inquiry about the completeness or accuracy of Office's copy of the above-identified papers, as the Technology Center's Customer Service Center will **not** be able to provide this service.

If applicant does not consider the Office's copy of such papers to be accurate, applicant must provide a copy of the above-identified papers (except for any U.S. or foreign patent

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documents submitted with the above-identified papers) with a statement that such copy is a complete and accurate copy of the originally submitted documents. If applicant provides such a copy of the above-identified papers and statement within **THREE MONTHS** of the mail date of this Office action, the Office will add the original mailroom date and use the copy provided by applicant as the permanent Office record of the above-identified papers in place of the copy made by the Office. Otherwise, the Office's copy will be used as the permanent Office record of the above-identified papers (*i.e.*, the Office will use the copy of the above-identified papers made by the Office for examination and all other purposes). This three-month period is not extendable.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

3. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. In Claims 1, 4, and 15, applicants do not indicate the component for b). Based on the rest of the disclosure, the examiner will assume that it is chromium. Applicants must clarify what the component is.

5. Claim 4 lacks sufficient antecedent basis for the limitation "the hot forming range" line 9.

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6. Claim 4 lacks sufficient antecedent basis for the limitation “the ferrite content” in line 8.
7. Claim 5 lacks sufficient antecedent basis for the limitation “the chromium” in line 2 with respect to Claim 4.
8. Claim 15 lacks sufficient antecedent basis for the limitation “the hot forming range” in line 9.
9. Claim 17 lacks sufficient antecedent basis for the limitation “the chromium” in line 1 with respect to Claim 15.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Burnett et al (US 4,592,890) and the *Metals Handbook, 9<sup>th</sup> Edition*.

Burnett anticipates the claimed invention. Burnett teaches a nickel dental casting alloy with the following composition by weight: 78-84% Ni, 0-3% Gd, 11-15% Cr, 0-7% Mo, 0-3% Mn, 0-0.8% C, 0-3% Si (column 1, lines 45-60). The anticipated ranges are 78-84% Ni, 0.1-3% Gd, 13-15% Cr, and 1.5-7% Mo. The ferrite content reads on 0% ferrite in Claim 1. Regarding the presence of the residual amounts of Mn, P, S, and N as claimed in Claim 1, it is inherent that Mn, P, S, and N would be present in residual amounts in nickel as taught by the *Metals*

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*Handbook, 9<sup>th</sup> Edition.* On page 713, the *Handbook, 9<sup>th</sup> Ed.* shows the impurity concentrations of metals including nickel. Among others, Mn, S, N, and P are shown to be impurities. Regarding the properties at the claimed temperature, the solidus temperature of the alloy is 2120° F [1160° C] (column 5, line 15). Additionally, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 195 USPQ 430, 433 (CCPA 1977). Regarding Claim 2, Burnett teaches 78-87% Ni.

12. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsai (US 4,210,447) and the *Metals Handbook, 9<sup>th</sup> Edition.*

Tsai anticipates the claimed invention. Tsai teaches an alloy used for dental restoration comprising the following composition: 58-68% Ni, 0.01-5% Gd, 18-23% Cr, 6-10% Mo, 0.01-0.5% Si, 0.01-0.1% C, and 0.01-0.4% Mn (Claim 2). The anticipated ranges are 58-68% Ni, 0.1-5% Gd, 18-18.5% Cr, and 6-10% Mo. The ferrite content reads on 0% ferrite in Claim 1. It is inherent that Mn, P, S, and N would be present in residual amounts in nickel as taught by the *Metals Handbook, 9<sup>th</sup> Edition.* On page 713, the *Handbook, 9<sup>th</sup> Ed.* shows the impurity concentrations of metals including nickel. Among others, Mn, S, N, and P are shown to be impurities. Regarding the properties at the claimed temperature, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or

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obviousness has been established. *In re Best*, 195 USPQ 430, 433 (CCPA 1977). Regarding Claim 2, Tsai teaches 58-68% Ni.

13. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Kajimura et al (JP 06192792) and *Metals Handbook, 10<sup>th</sup> Edition*.

Kajimura anticipates the invention substantially as claimed. Kajimura teaches a stainless steel having high neutron absorption capacity with the following composition by weight: 0.05-1.0% Gd, 18-26% Cr, 0.1-5% Mo, up to 2% Mn, 10-22% Ni, up to 0.5% Si, up to 0.02% C, and the balance Fe with impurities (abstract). Kajimura does not specifically teach the residual presence of P, S, and N as claimed in Claim 1, but it is inherent that P, S, and N would be present in the steel as impurities as evidenced by the *Metals Handbook, 10<sup>th</sup> Edition*: P and S are present due to the manufacture of steel from pig iron or scrap (page 141, column 3, paragraph 1), and N is present due to the production of stainless steel (page 930, column 3, paragraph 1). Regarding the claimed ferrite content in Claim 1, the claim reads on 0% ferrite. Regarding the property of preventing liquidation and cracking in Claim 1, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 195 USPQ 430, 433 (CCPA 1977). Regarding Claim 3, Kajimura teaches 10-22% Ni.

14. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujiwara et al (JP 62056557).

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Fujiwara anticipates the claimed invention. In the English abstract, Fujiwara teaches a stainless steel for neutron-absorption capacity with the following composition by weight: 0.1-3% Gd, 15-20% Cr, < 5% Mo, < 2% Mn, 7-35% Ni, < 0.045% P, < 0.03% S, < 1.5% Si, 0.1-0.15% C, and < 0.3% N. Regarding the ferrite content, Claim 1 reads on 0% ferrite. Regarding the property of preventing liquidation and cracking, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 195 USPQ 430, 433 (CCPA 1977). Regarding Claim 3, Fujiwara teaches 10-23% Ni.

15. Claims 4-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kajimura (JP 06192792) and the *Metals Handbook, 10<sup>th</sup> Edition*.

Kajimura anticipates claimed invention. Kajimura teaches a stainless steel having high neutron absorption capacity with the following composition by weight: 0.05-1.0% Gd, 18-26% Cr, 0.1-5% Mo, up to 2% Mn, 10-22% Ni, up to 0.5% Si, up to 0.02% C, and the balance Fe with impurities (abstract). Kajimura does not specifically teach the residual presence of P, S, and N as claimed in Claim 4, but it is inherent that P, S, and N would be present in the steel as impurities as evidenced by the *Metals Handbook, 10<sup>th</sup> Edition*: P and S are present due to the manufacture of steel from pig iron or scrap (page 141, column 3, paragraph 1), and N is present due to the production of stainless steel (page 930, column 3, paragraph 1). Regarding the claimed ferrite content in Claim 4, the claim reads on 0% ferrite. Regarding the teaching of a

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wrought steel alloy in Claim 4, since the steel can be hot rolled (abstract), it is well known in the art that a wrought metal is one that is hot or cold worked (Merriman, *A Dictionary of Metallurgy*, pages 392-93). Regarding the hot forming range, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 195 USPQ 430, 433 (CCPA 1977). Regarding Claim 5, Kajimura reads on 0.1-1% Gd, 18% Cr, 1.5-3% Mo, and 1-2% Mn. Regarding Claim 6, the steel can be rolled (abstract), which is a well known step in manufacturing as evidenced by the *Metals Handbook, 10<sup>th</sup> Edition* (pages 210-11). Regarding Claim 7, Kajimura reads on 11-15% Ni. Regarding Claim 8, Kajimura reads on 0.1-1% Gd.

16. Claims 21, 22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Burnett et al (US 4,592,890) and the *Metals Handbook, 9<sup>th</sup> Edition*.

Burnett anticipates the claimed invention. Burnett teaches a nickel dental casting alloy with the following composition by weight: 78-84% Ni, 0-3% Gd, 11-15% Cr, 0-7% Mo, 0-2% Fe, 0-3% Mn, 0-0.8% C, 0-3% Si (column 1, lines 45-60). The anticipated ranges are 78-84% Ni, 0.1-3% Gd, 13-15% Cr, 1.5-7% Mo, and 0.01-2% Fe. It is inherent that P, S, and N would be present in residual amounts in nickel as taught by the *Metals Handbook, 9<sup>th</sup> Edition*. On page 713, the *Handbook, 9<sup>th</sup> Ed.* shows the impurity concentrations of metals including nickel. Among others, S, N, and P are shown to be impurities. Regarding Claim 22, Burnett teaches 0.01-2% Fe. Regarding Claim 24, Burnett teaches 0.1-3% Gd.

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17. Claims 21, 22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsai (US 4,210,447) and the *Metals Handbook, 9<sup>th</sup> Edition*.

Tsai anticipates the claimed invention. Tsai teaches an alloy used for dental restoration comprising the following composition: 58-68% Ni, 0.01-5% Gd, 18-23% Cr, 6-10% Mo, 0.01-2% Fe, 0.01-0.5% Si, 0.01-0.1% C, and 0.01-0.4% Mn (Claim 2). The anticipated ranges are 58-68% Ni, 0.1-5% Gd, 18-23% Cr, 6-10% Mo, and 0.01-2% Fe. The alloy is cast (column 3, lines 15-17). It is inherent that P, S, and N would be present in residual amounts in nickel as taught by the *Metals Handbook, 9<sup>th</sup> Edition*. On page 713, the *Handbook, 9<sup>th</sup> Ed.* shows the impurity concentrations of metals including nickel. Among others, S, N, and P are shown to be impurities. Regarding Claim 22, Tsai teaches 0.01-2% Fe. Regarding Claim 24, Tsai teaches 0.1-3% Gd.

#### ***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett et al (US 4,592,890) and the *Metals Handbook, 9<sup>th</sup> Edition*.

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Burnett and the *Metals Handbook, 9<sup>th</sup> Ed.* discloses the invention substantially as claimed. However, Burnett and the *Metals Handbook, 9<sup>th</sup> Ed.* does not specifically disclose the exact claimed ranges for Gd, Cr, and Mo as in Claim 1. In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 2144.05. Therefore, the claimed range would have been obvious to one skilled in the art in view of Burnett and the *Metals Handbook, 9<sup>th</sup> Ed.*

20. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajimura et al (JP 06192792) and the *Metals Handbook, 10<sup>th</sup> Edition.*

Kajimura and the *Metals Handbook, 10<sup>th</sup> Ed.* discloses the invention substantially as claimed. However, Kajimura and the *Metals Handbook, 10<sup>th</sup> Ed.* does not specifically disclose the exact ranges for Gd, Cr, Mo, and Ni. It would have been obvious to one with ordinary skill in the art at the time the invention was made that the alloy of Kajimura reads on the claimed invention, since in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 2144.05.

21. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara.

Fujiwara discloses the invention substantially as claimed. However, Fujiwara does not specifically disclose the ranges of Cr, Mo, and Ni in Claim 1. It would have been obvious to one

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with ordinary skill in the art at the time the invention was made that the alloy of Fujiwara reads on the claimed invention, since in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 2144.05.

22. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajimura (JP 06-192792) the *Metals Handbook, 10<sup>th</sup> Edition*.

Kajimura discloses the invention substantially as claimed. However, Kajimura does not specifically disclose the exact ranges of Cr, Gd, and Mo in Claim 4. It would have been obvious to one with ordinary skill in the art at the time the invention was made that the alloy of Kajimura reads on the claimed invention, since in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 2144.05.

23. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara (JP 62056557) in view of the *Metals Handbook, 10<sup>th</sup> Edition*.

In the English abstract, Fujiwara teaches a stainless steel for neutron-absorption capacity with the following composition by weight: 0.1-3% Gd, 15-20% Cr, < 5% Mo, < 2% Mn, 7-35% Ni, < 0.045% P, < 0.03% S, < 1.5% Si, 0.1-0.15% C, and < 0.3% N. Regarding the ferrite content, Claim 4 reads on 0% ferrite. Regarding the exact ranges of Cr, Mo, Mn, and Ni in

Claim 4, in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 2144.05. Regarding the forming range in Claim 4, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 195 USPQ 430, 433 (CCPA 1977). Regarding the limitation of “wrought”, this limitation refers to a metal that has been mechanically worked, which includes rolling (Merriman, pages 392-93); Fujiwara teaches that the steel has superior hot workability and cold workability. Regarding Claim 5, Fujiwara teaches 0.1-2% Gd, 15-18% Cr, 1.5-3% Mo, and 1% up to less than 2% Mn. Regarding Claim 6, the steel is cast into an ingot, hot worked, and cold worked. Regarding Claim 7, Fujiwara teaches 11-15% Ni. Regarding Claim 8, Fujiwara teaches 0.1-1.2% Gd. However, Fujiwara does not teach that the steel is austenitic as claimed in Claim 4.

Regarding the teaching of austenitic steel, the examiner applied the obviousness test from the flowchart in MPEP § 2144.08 (shown in the Appendix of this Office Action). Following the flowchart, the answers are as follows:

- II.A.4a. No
- II.A.4b. No
- II.A.4c. Yes
- II.A.4d. Yes

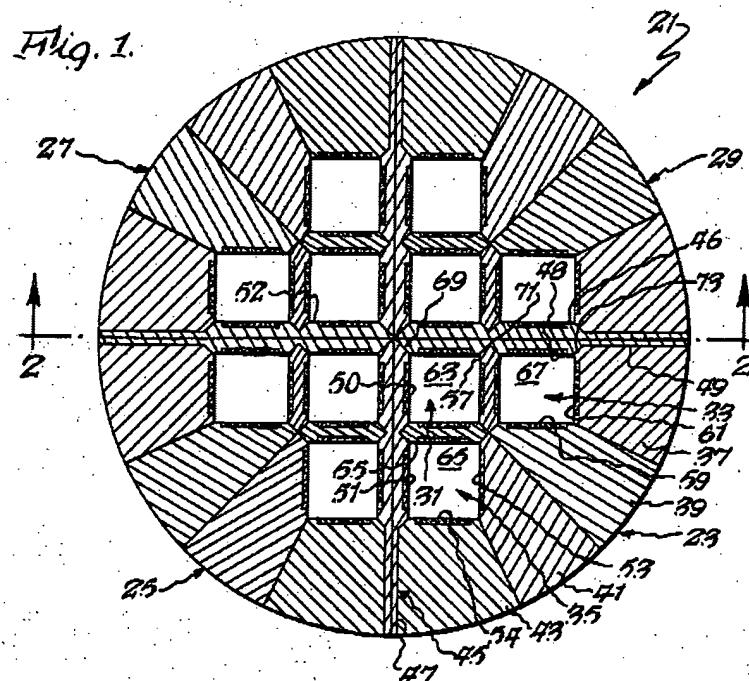
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It would have been obvious to one with ordinary skill in the art at the time the invention was made that the steel of Fujiwara could have austenitic properties, since the *Metals Handbook, 10<sup>th</sup> Ed.* teaches that a steel with 16-26% Cr, up to 35% Ni, and up to 15% Mn can be austenitic (page 842, column 1, paragraph 3).

24. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajimura '792 as applied to Claims 4-8 above, and further in view of Shaffer et al (US 4,292,528).

Kajimura discloses the invention substantially as claimed. However, Kajimura does not specifically teach that the steel could be used as an internal as claimed in Claim 9 or a canister as claimed in Claim 10 as defined in the present specification on page 9, paragraph 23.

Shaffer teaches a cask for radioactive material such as spent nuclear reactor fuel (see Figure 1 below).



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The walled internal compartments 31, 33, and 35, absorb neutrons (column 1, lines 60 and 61; column 2, lines 64 and 65). Compartment walls 55 and 57 have parts that serve as bearers of neutron-absorbing material (column 2, line 67 to column 3, line 7). Regarding the parts of Claims 9 and 10, it would have been obvious to one with ordinary skill in the art at the time the invention was made that the stainless steel taught by Kajimura could be used in the cask components of Shaffer, since Shaffer teaches that the cask material could be made from stainless steel (Shaffer, column 7, lines 7-24). Also, Kajimura meets the requirement in Shaffer (column 7, lines 20 and 21) for corrosion resistance.

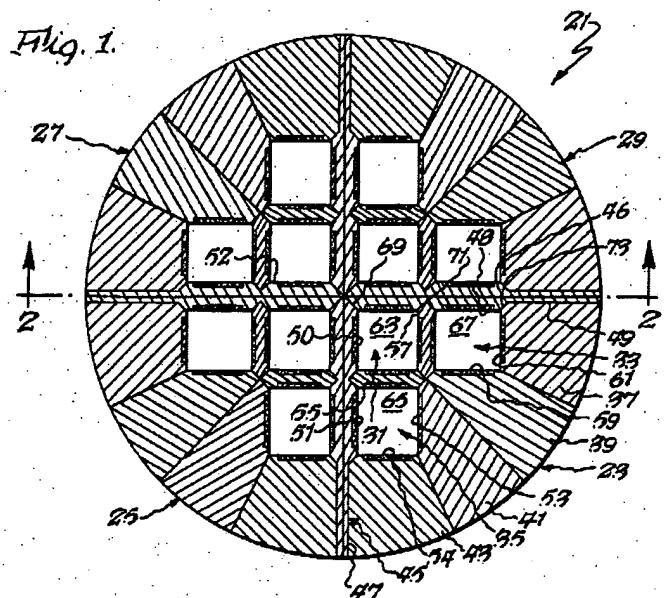
25. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara '557 as applied to Claims 4-8 above, and further in view of Shaffer.

Fujiwara discloses the invention substantially as claimed. However, Fujiwara does not specifically teach that the steel could be used as an internal as claimed in Claim 9 or a canister as claimed in Claim 10 as defined in the present specification on page 9, paragraph 23.

Shaffer teaches a cask<sup>1</sup> for radioactive material such as spent nuclear reactor fuel (see Figure 1 below).

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<sup>1</sup>cask: a sturdy cylindrical container for storing liquids; a barrel. 1987-1996 Microsoft Corporation. All rights reserved. *The Columbia Dictionary of Quotations* is licensed from Columbia University Press. Copyright © 1995.



The walled internal compartments 31, 33, and 35, absorb neutrons (column 1, lines 60 and 61; column 2, lines 64 and 65). Compartment walls 55 and 57 have parts that serve as bearers of neutron-absorbing material (column 2, line 67 to column 3, line 7). Regarding the parts of Claims 9 and 10, it would have been obvious to one with ordinary skill in the art at the time the invention was made that the stainless steel taught by Fujiwara could be used in the cask components of Shaffer, since Shaffer teaches that the cask material could be made from stainless steel (Shaffer, column 7, lines 7-24). Also, Fujiwara meets the requirement in Shaffer (column 7, lines 20 and 21) for corrosion resistance.

26. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ziolkowski (US 3,362,813) in view of Wachter (US 4,010,375) and Rudnick et al (US 5,926,516).

Ziolkowski teaches an austenitic stainless steel alloy used for high thermal neutron absorption with the following composition by weight: 0.2-3% Gd, 2-26% Cr, up to 4% Mo, up to

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10% Mn, 3.5-22% Ni, 5-25% ferrite, up to 1% P and S, up to 0.25% C, up to 2% Si, and up to 0.7% N (column 2, lines 7-28). It is inherent that the stainless steel of Ziolkowski reads on a poisoned member, since the steel absorbs neutrons (column 1, lines 8-10). Wachter establishes that it is well known in the art that a poison is the same as a neutron-absorbing material (column 1, lines 37 and 38). However, Ziolkowski does not specifically disclose that the poisoned member comprises a spent nuclear fuel storage system as claimed.

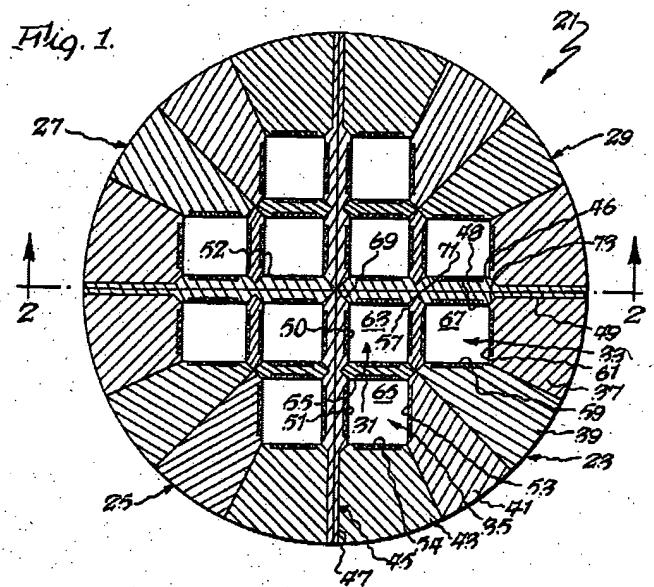
Rudnick teaches an absorption structure that is used in a fuel assembly storage basin of a nuclear reactor to receive spent fuel assemblies (column 4, lines 1-4). The structure is made from austenitic steels (column 3, lines 64-67), and the structure can contain gadolinium. It would have been obvious to one with ordinary skill in the art at the time the invention was made that the alloy of Ziolkowski would be used as part of a spent nuclear fuel storage system, since Rudnick teaches that absorber parts permit the compact storage of neutron-emitting components, especially fuel assemblies, from nuclear reactors (column 1, lines 18-25).

27. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ziolkowski in view of Wachter and Rudnick as applied to Claim 11 above, and further in view of Shaffer (US 4,292,528).

Ziolkowski anticipates the invention substantially as claimed. However, Ziolkowski does not disclose that the claimed poisoned member, which is comprised of the steel alloy taught by Ziolkowski, is an internal as claimed in Claim 12, a canister as claimed in Claim 13, both an

internal and a canister as claimed in Claim 14 as defined in the present specification on page 9, paragraph 23.

Shaffer teaches a cask for radioactive material such as spent nuclear reactor fuel (see Figure 1 below).



The walled internal compartments 31, 33, and 35, absorb neutrons (column 1, lines 60 and 61; column 2, lines 64 and 65). Compartment walls 55 and 57 have parts that serve as bearers of neutron-absorbing material (column 2, line 67 to column 3, line 7). Regarding the parts of Claims 12 –14, it would have been obvious to one with ordinary skill in the art at the time the invention was made that the stainless steel taught by Ziolkowski could be used in the cask components of Shaffer, since Shaffer teaches that the cask material could be made from stainless steel (Shaffer, column 7, lines 7-24).

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28. Claims 21, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett (US 4,592,890).

Burnett discloses the invention substantially as claimed. However, Burnett does not specifically disclose the exact claimed ranges for Gd, Cr, and Mo in Claim 21. In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 2144.05.

29. Claims 21, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai (US 4,210,447).

Tsai discloses the invention substantially as claimed. However, Tsai does not specifically disclose the exact claimed range for Gd in Claim 21. In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 2144.05.

#### ***Allowable Subject Matter***

30. Claims 15-20 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, second paragraph, set forth in this Office action.

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31. Claims 23, 25, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

32. The following is a statement of reasons for the indication of allowable subject matter: Regarding Claims 15-20, there is no basis to suggest that the cast nickel alloy of Burnett or Tsai could be wrought, since Merriman teaches that a wrought metal has distinguishable properties from cast metal (Page 393). The intent of the alloy in the prior art is only to be cast for dental purposes. Regarding Claims 23, 25, and 26, there is no basis to suggest that the nickel alloy of Burnett or Tsai could be used as structural components of spent nuclear reactor fuel, as the canister and internal is defined in the present specification. Burnett and Tsai do not teach that the nickel alloy could be useful in other structures.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tima M. McGuthry-Banks, whose telephone number is 703-308-1917. The examiner can normally be reached on 9:30-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King, can be reached on 703-308-1146. The fax numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is 703-308-0651.



Tima M. McGuthry-Banks  
Examiner  
Art Unit 1742

May 28, 2002

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## APPENDIX

I. If the closest prior art is a single reference disclosing a genus, determine whether the claimed species or subgenus would have been obvious to one of ordinary skill in the pertinent art at the time the invention was made by performing the following analysis...

